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Booklet 2A

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ASSIGNMENT BOOKLET 2A

SCN1270 Science 10
Module 2: Section 1 Assignment

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Date Assignment Submitted: _____	(If label is missing or incorrect) Student File Number: _____
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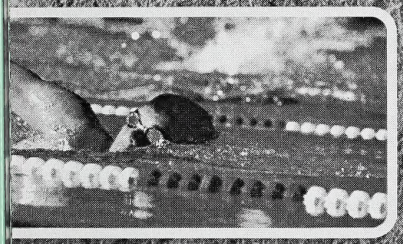
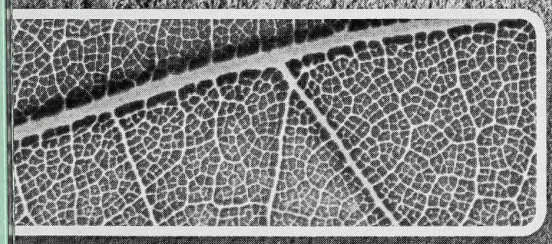
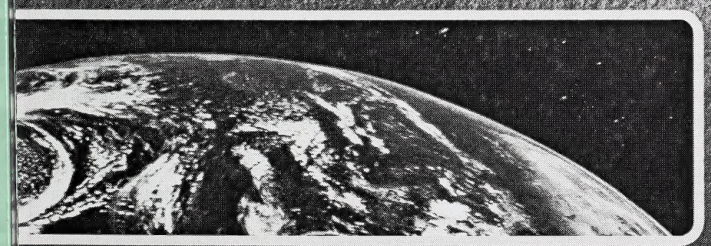
SCIENCE 10

Module 2

Energy Flow in Technological Systems







Assignment Booklet 2A

Learning Technologies Branch

Alberta EDUCATION

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Section 1 Assignment	35	

Teacher's Comments

Science 10
Module 2: Energy Flow in Technological Systems
Assignment Booklet 2A
Section 1 Assignment
Learning Technologies Branch
ISBN 0-7741-2698-1

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The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Assignment Booklet.

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Students	✓
Teachers	✓
Administrators	
Home Instructors	
General Public	
Other	

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- Alberta Education, **http://www.education.gov.ab.ca**
- Learning Technologies Branch, **http://www.education.gov.ab.ca/ltb**
- Learning Resources Centre, **http://www.lrc.education.gov.ab.ca**

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ASSIGNMENT BOOKLET 2A
SCIENCE 10: MODULE 2
SECTION 1 ASSIGNMENT

This Assignment Booklet is worth 35 marks out of the total 123 marks for the assignments in Module 2. The value of each assignment and each question is stated in the left margin.

Read all parts of your assignment carefully and record your answers in the appropriate places. If you have difficulty with an assignment, go back to your Student Module Booklet and review the appropriate lesson. Be sure to proofread your answers carefully before submitting your Assignment Booklet.

Section 1 Assignment: Motion and Work

(35)

For questions 1 to 6, read each question carefully. Decide which of the choices BEST answers the question. Place your answer in the blank space given.

(1) _____ 1. Which statement describes an object travelling with uniform velocity?

A. An object moves with constant speed along a straight path.

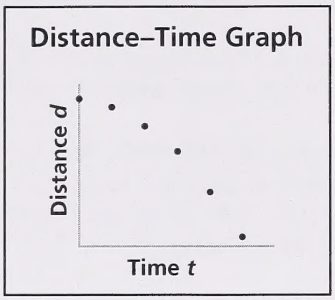
B. An object moves with constant speed along a curved path.

C. An object moves so that an imaginary line segment from the object to a reference point changes in length.

D. An object moves so that an imaginary line from the object to a reference point changes in direction.

(1) _____ 2. Which distance–time graph most closely represents an object moving with uniform motion?

A.



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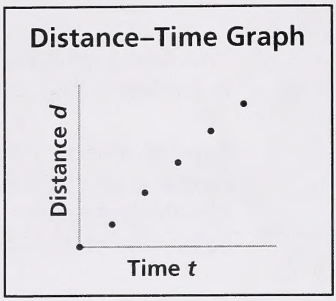

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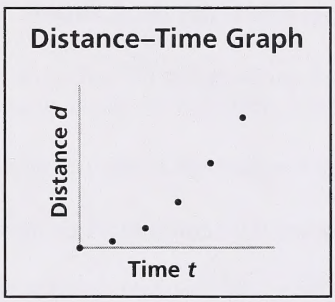

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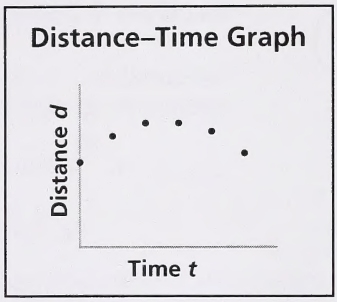
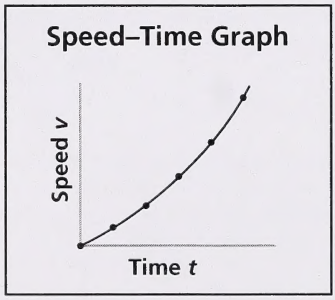


(1) _____ 3. Which speed–time graph most closely represents an object travelling with uniform motion?

A.



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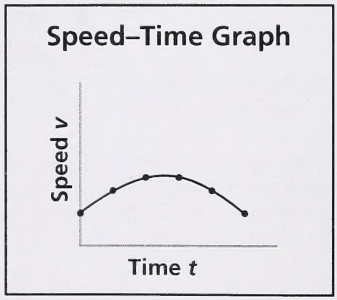

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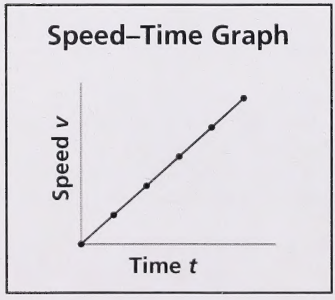

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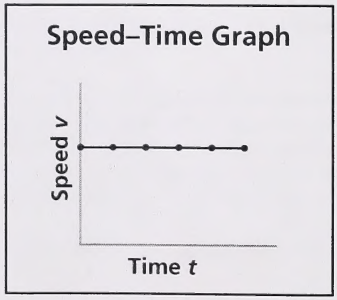
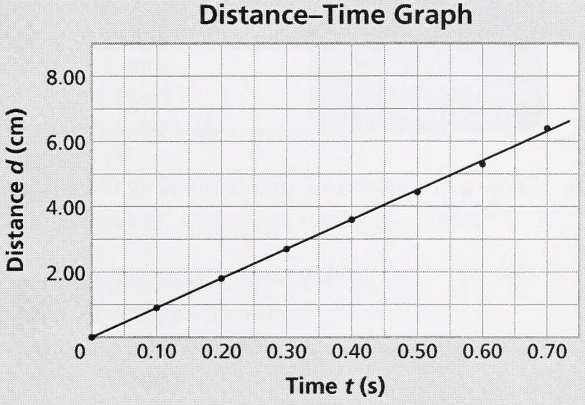


(1) _____ 4. What does the area under the line of a speed–time graph represent?

A. acceleration
B. average speed
C. elapsed time
D. distance travelled

Use the following information to answer questions 5 and 6.

Haley was investigating the motion of an object moving on a straight, level air track. She collected distances travelled at regular intervals using a ticker tape. From the resulting data, Haley made the following graph.



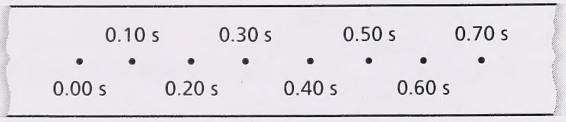
(1) _____ 5. What is the slope of the graph?

A. 4.4 cm/s
B. 8.8 cm/s
C. 9.0 cm/s
D. 13.5 cm/s

(1) _____ 6. What does the slope of the graph indicate about the object's motion?

A. average speed
B. direction of motion
C. distance travelled
D. average acceleration

7. The following ticker tape shows the data of a moving object.

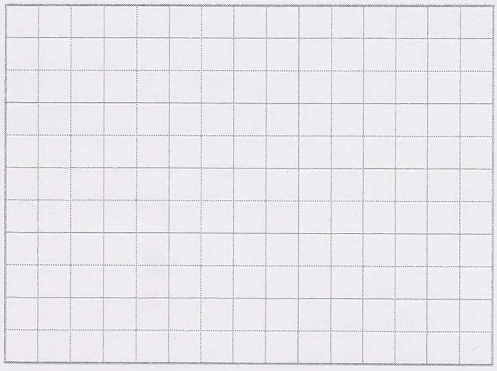


Use this ticker tape to answer the questions that follow. **Show your work in the space given.**

(2) a. Complete the data table, showing the motion of the object.

Time *t* (s)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70
Distance *d* (cm)								

(2) b. Draw a distance–time graph based on the data table. Include a line of best fit.



Return to page 25 of the Student Module Booklet and begin Section 1: Lesson 2.

For questions 8 to 14, read each question carefully. Decide which of the choices BEST answers the question. Place your answer in the blank space given.

Use the following information to answer question 8.

Students made the following statements about scalar and vector quantities.

I. A scalar quantity indicates magnitude but no direction.
II. A scalar quantity indicates magnitude and direction.
III. A vector quantity indicates magnitude but no direction.
IV. A vector quantity indicates magnitude and direction.

(1) _____ 8. Which statements are correct?

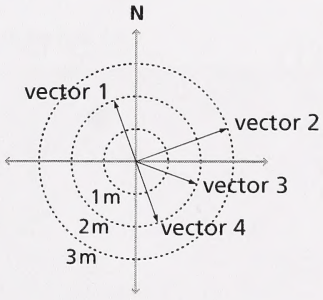
A. statement I only
B. statements I and IV
C. statements II and III
D. statement IV only

(1) _____ 9. Which quantities of motion are vector quantities?

A. speed and displacement
B. speed and distance travelled
C. velocity and displacement
D. velocity and distance travelled

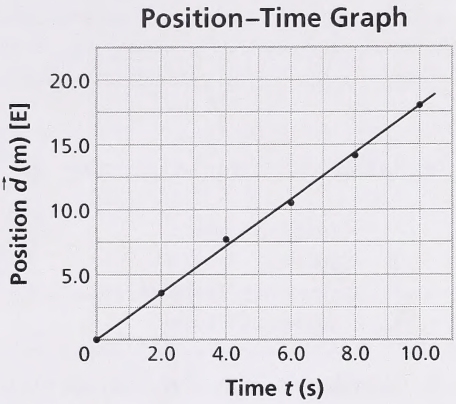
(1) _____ 10. Which vector in the diagram on the right corresponds to 2 m [E 20° S]?

A. vector 1
B. vector 2
C. vector 3
D. vector 4



(1) _____ 11. Based on the position–time graph for an object, what is the average velocity of the object for the first 10.0 s?

A. 1.8 m/s
B. 1.80 m/s
C. 1.8 m/s [E]
D. 1.80 m/s [E]



Use the following information to answer questions 12 and 13.

A ball rolled 12.0 m [E] in 10.0 s, hit an obstacle, and rolled straight back. After the collision, the ball rolled 8.00 m [W] in 6.00 s.

(1) _____ 12. What was the average speed of the ball?

A. 1.25 m/s
B. 0.250 m/s
C. 1.25 m/s [E]
D. 0.250 m/s [E]

(1) _____ 13. What was the average velocity of the ball?

A. 1.25 m/s
B. 0.250 m/s
C. 1.25 m/s [E]
D. 0.250 m/s [E]

(1) _____ 14. An airplane travelled at an average velocity of 250 km/h [E]. The resulting displacement was 625 km [E]. How long did the trip take?

A. 2.50 h
B. 3.75 h
C. 4.25 h
D. 4.50 h

15. A locomotive moved 18.0 m [W] in a time of 6.00 s and stopped. After stopping, the locomotive moved 12.0 m [E] in 10.0 s.

(1) a. Determine the distance travelled by the locomotive. **Show your work.**

(1) b. Determine the displacement of the locomotive. **Show your work.**

Return to page 35 of the Student Module Booklet and begin Section 1: Lesson 3.

For questions 16 to 19, read each question carefully. Decide which of the choices BEST answers the question. Place your answer in the blank space given.

Use the following information to answer question 16.

A passenger car can be moving in the following ways:

I. A car is moving forward while the brake is applied.

II. A car is moving backwards while the brake is applied.

III. A car is in reverse (R) and moving backwards while the gas pedal is pressed down.

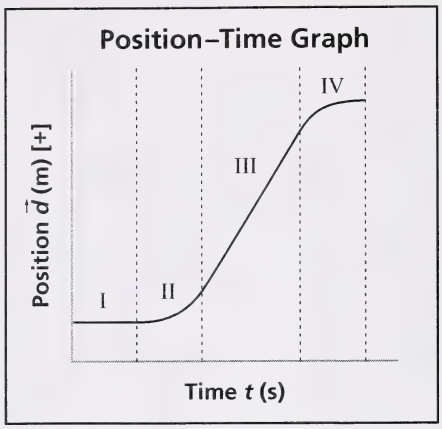
IV. A car is in drive (D) and moving forward while the gas pedal is pressed down.

(1) _____ 16. In which of these ways would the car be moving with positive acceleration?

A. I only
B. IV only
C. II and III only
D. II and IV only

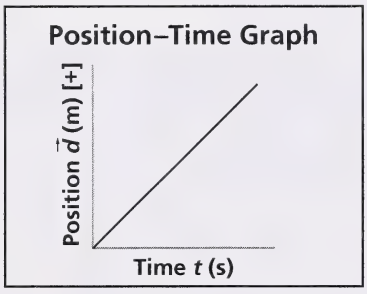
(1) _____ 17. The position–time graph given describes the motion of an object. During which of the intervals (I to IV) is the object undergoing acceleration?

A. I only
B. II only
C. I and III only
D. II and IV only



(1) _____ 18. Which position–time graph indicates negative acceleration?

A.



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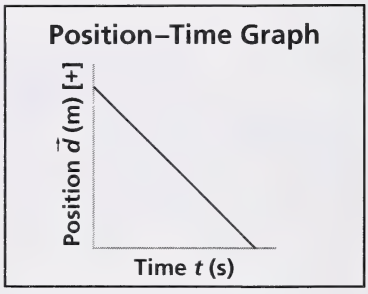

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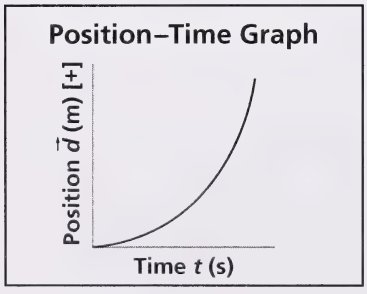

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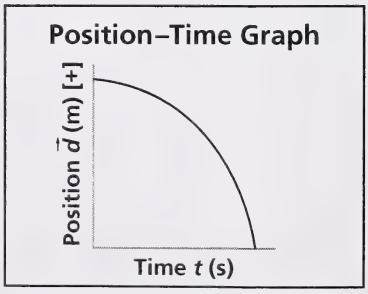
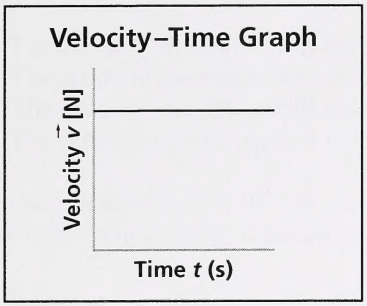


(1) _____ 19. Which velocity–time graph indicates positive acceleration?

A.



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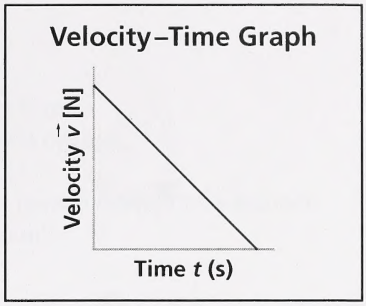

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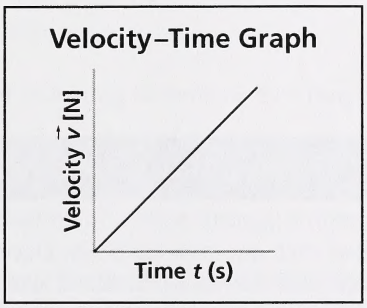

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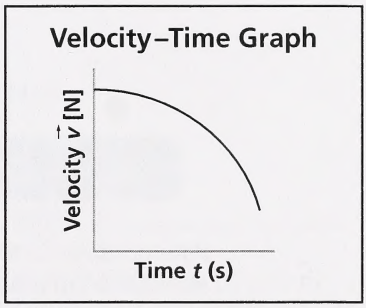

(2) 20. A passenger bus is travelling 28.0 m/s to the right when the driver applies the brakes. The bus stops in 5.00 s. What is the acceleration ($\vec{a}$) of the bus as it comes to a stop? **Show your work.**

(2) 21. A toy car starts from rest and accelerates at 1.50 m/s^2 [E] for 5.25 s. What is the final velocity, $\vec{v}_f$, of the car? **Show your work.**

Return to page 48 of the Student Module Booklet and begin Section 1: Lesson 4.

For questions 22 to 26, read each question carefully. Decide which of the choices BEST answers the question. Place your answer in the blank space given.

(1) _____ 22. Which of the following is a vector quantity?

A. speed
B. weight
C. distance travelled
D. mechanical energy

(1) _____ 23. Which of the following is a scalar quantity?

A. work
B. velocity
C. acceleration
D. displacement

(1) _____ 24. What is the work done in lifting a bag of potatoes 1.24 m above the ground with an upward force 88.7 N?

A. 1.40×10^{-2} J
B. 7.15×10^{1} J
C. 1.10×10^{2} J
D. 2.20×10^{2} J

(1) _____ 25. Suppose there is no unbalanced force acting on a moving object. How will the object's motion continue?

A. The speed of the object will decrease.
B. The speed of the object will increase.
C. The speed of the object will remain the same.
D. The direction of the object's velocity will change.

(1) _____ 26. An elevator does 9.75×10^4 J of work on a person riding up to another floor. How much energy does the person gain?

A. 0 J
B. 9.94×10^3 J
C. 9.75×10^4 J
D. 9.56×10^5 J

27. Complete the following statements by filling in the blanks.

(1) a. A(n) _____ is a push or a pull on an object.

(1) b. The application of a force through a distance is called _____ .

(1) 28. Samuel applies a horizontal force of 35.0 N to a sleigh over a distance of 1.50 m along a level surface. Calculate the work done on the sleigh by Samuel. **Show your work.**

Submit your completed Assignment Booklet 2A to your teacher for assessment. Then return to page 59 of the Student Module Booklet and begin Section 2.

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